

GP1-95-DI

NOAA Ship Discoverer

San Diego, California - San Diego, California

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ACQUISITION:

Thirty-four CTD profiles were collected during this cruise covering two meridionals from 8N to 8S. Eighteen profiles were collected along 95W, and 15 along 110W. The majority of casts were to 1000 m; 8 casts were deep (>3000 db). A test cast was made at 32N, 117W enroute to the first station. These data were not processed.

All casts used TAO's Sea-Bird 9plus CTD s/n 09P10881-0390 measuring pressure (s/n 58950), temperature (s/n 1708), and conductivity (s/n 1467). The CTD was mounted in a custom 24-bottle frame with a Sea-Bird rosette sampler. The CTD data stream was passed through a Sea-Bird 11plus deck unit (s/n 376) with factory settings. An analog signal was recorded onto the audio portion of VCR tape as a backup. Digitized data were sent to a Zenith personal computer equipped with Sea-Bird's SEASOFT acquisition software (version 4.207) where calibrated data were displayed in graphical form in real-time, as well as stored in raw form onto the hard disk. Backups of the raw data were made on 40 Mbyte 1/4" cartridge tapes and returned to PMEL for post-cruise processing.

SALINITIES:

Salinity analysis was performed using Guildline Autosol salinometers s/n 56.119 (last calibrated at NRCC January 25, 1995). IAPSO standard seawater batch #P114 was used for all casts. NRCC calibrations were not applied to the bottle salinities used to calibrate this data set, only a drift-during-run linear interpolation correction. Standard operating temperature was 24 degrees Celsius.

Several autosol runs jumped in conductivity by approximately 0.003 mS/cm owing to poor Autosol standardization and fluctuating ambient temperature in the Autosol lab space of 3-6 C. Sample salinities from a run of GP295 stations 26-30 (SPR95A.CAL stations 59-63) were bad and not included in the calibration file.

POST-CRUISE CONDUCTIVITY CALIBRATIONS:

SPR95A.CAL was created at PMEL using program SBECAL. Anomalous differences between CTD and bottle salinities were scrutinized. Bottle salinities were checked against their original log sheets for typos. GP395 stations 17-22 (SPR95A.CAL stations 82-87) used PMC's CTD package and this group was calibrated separately.

Final pressure and temperature calibrations were pre-cruise. Conductivity calibration coefficients were best determined for PMEL's CTD using a station-dependent second-order fitting routine, CALCOS2,

written by Greg Johnson in MATLAB on the following groups. Stations 82-87 used PMC's CTD and conductivity calibration coefficients were determined using CALCOS1, station-dependent linear fitting routine.

```
Stations 1-18:  number of points used   169
                  total number of points  196
                  % of points used in fit  86.22
                  fit standard deviation   0.001077
                  fit bias                  -0.0014831927 mS/cm
                  min fit slope (sta 1)    1.0002803
                  max fit slope (sta 18)   1.0003865
```

```
Stations 19-50: number of points used   344
                  total number of points  378
                  % of points used in fit  91.01
                  fit standard deviation   0.001792
                  fit bias                  -0.011024989 mS/cm
                  min fit slope (sta 50)   1.0005484
                  max fit slope (sta 19)   1.0007496
```

```
Stations 51-65: number of points used    95
                  total number of points  117
                  % of points used in fit  81.2
                  fit standard deviation   0.001161
                  fit bias                  -0.0088542832 mS/cm
                  min fit slope (sta 51)   1.0004157
                  max fit slope (sta 65)   1.000484
```

```
Stations 66-81: number of points used   161
                  total number of points  192
                  % of points used in fit  83.85
                  fit standard deviation   0.00197
                  fit bias                  -0.012371588 mS/cm
                  min fit slope (sta 81)   1.0005701
                  max fit slope (sta 66)   1.0007338
```

```
Stations 82-87: number of points used    58
                  total number of points   72
                  % of points used in fit  80.56
                  fit standard deviation   0.00104
                  fit bias                  -0.012591445 mS/cm
                  min fit slope (sta 82)   1.0005433
                  max fit slope (sta 87)   1.0005563
```

```
Stations 88-104: number of points used   167
                  total number of points  204
                  % of points used in fit  81.86
                  fit standard deviation   0.00147
                  fit bias                  -0.013652733 mS/cm
                  min fit slope (sta 88)   1.0006917
                  max fit slope (sta 104)  1.0007495
```

Slope and bias values were applied to CTD data using PMEL Fortran program SPR95_EPIC; and to bottle files using CALMSTR.

FINAL PROCESSING:

The following are the standard SEASOFT processing modules used to reduce Sea-Bird CTD data:

DATCNV converts raw data to engineering units and creates a bottle file if a Sea-Bird rosette sampler was used. (MARKSCAN creates a

